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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/888,478	06/26/2001	Thomas Nahrwold	8200.461	9105

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EXAMINER

KIM, CHONG HWA

ART UNIT	PAPER NUMBER
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3682

DATE MAILED: 07/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicant(s)

09/888,478

Applicant(s)

NAHRWOLD, THOMAS

Examiner

Chong H. Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

The Examiner acknowledges the applicant's Amendment filed Dec 30, 2002 in response to the Office action made on Sep 30, 2002 and canceling of claim 2.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-5, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Baedke et al., U.S. Patent 5,316,106.

Baedke et al. shows, in Figs. 1-4, a system for circulating lubricant in an assembly, comprising;

a housing 12 adapted to contain a reservoir 60 of hydraulic lubricant;

an aperture (next to the tube ends 76 and 78) in the housing to permit lubricant circulation;

a chamber 66 located adjacent the aperture, adapted to hold lubricant therein, the chamber located at a first elevation;

a component 42 supported for rotation partially in the lubricant and partially in a portion of the housing located above the lubricant, having means (teeth) for moving lubricant from the reservoir to the chamber;

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a lubricant cooler 16, 17 disposed outside of the housing 12;

conduit means (72 and the channel inside the tube 17) having a first end 76 hydraulically connected to the chamber and a second end 80 hydraulically connected to the cooler at a location that is distant from the reservoir and at a second elevation lower than the first elevation, for carrying lubricant from the chamber to the cooler, using gravity to transport lubricant from the first elevation to the second elevation;

the housing includes first and second axle tubes 46, 44 extending outward in opposite directions from the reservoir;

the conduit means includes first and second conduits (72 and the channel inside the tube 17), the first conduit having a first end 76 connected to the chamber and a second end 80 hydraulically connected to the cooler 17 mounted on the first axle tube 46 of the housing;

wherein the second conduit (the channel inside the tube 17) has a first end hydraulically connected to the cooler and a second end hydraulically connected to the housing adjacent the reservoir, the second end of the second conduit being located at a third elevation lower than the first and second elevations;

wherein the conduit means provides a hydraulic loop from the chamber to the cooler and back to the reservoir;

wherein the cooler 17 is mounted on an exterior of an axle tube 46 extending from the housing;

wherein the component is a ring gear; and

wherein the component is an impeller fixed to a rotatable differential case.

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3. Claims 11-15, 19, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Baedke et al.

Baedke et al. shows, in Figs. 1-4, a system to dissipate heat from lubricant provide within a differential carrier, the system comprising;

a differential assembly (as shown in Fig. 1) having a lubricant reservoir 60;

a carrier cover plate 26 formed with an oil scrapper/pump outlet 66 provided adjacent a rotating member of the differential assembly;

an oil cooler 17 mounted on an adjacent axle tube 46;

a delivery system (72 and the channel inside the tube 17) to deliver lubricant from the outlet to the oil cooler and back to the reservoir;

whereby the lubricant is delivered from the carrier through the delivery system to the oil cooler via a gravity feed system;

wherein the delivery system comprises a first conduit 72 having a first end 76 hydraulically connected to the outlet at a first elevation and a second end hydraulically connected to the cooler at a location that is distant from the reservoir and at a second elevation lower than the first elevation, for carrying lubricant from the chamber to the cooler, using gravity to transport lubricant from the first elevation to the second elevation;

a second conduit (the channel inside the tube 17) has a first end hydraulically connected to the cooler and a second end hydraulically connected to the housing adjacent the reservoir, the second end of the second conduit being located at a third elevation lower than the first and second elevations;

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wherein the oil scrapper/pump outlet forms a chamber 68 on the cover plate, and wherein the delivery system provides a hydraulic loop from the chamber to the cooler and back to the reservoir;

wherein the cooler is mounted on an exterior of an axle tube extending from the housing;

wherein the component is a ring gear; and

wherein the component is an impeller fixed to a rotatable differential case.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baedke et al. in view of Gabelli et al., U.S. Patent 4,854,748.

Baedke et al. shows, as discussed above in the rejection of claim 1, the system for circulating lubricant in an assembly comprising the chamber with the outlet, but fails to show a temperature-sensitive flow control valve having a spring member for controlling a flow of lubricant.

Gabelli et al. shows, in Figs. 1 and 2, a lubricant chamber having an outlet comprising a temperature-sensitive flow control valve 6 with a spring member 10 to control the flow of the lubricant based at least in part on the temperature of the lubricant.

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It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the temperature-sensitive flow control valve as taught by Gabelli et al. in the system for circulating lubricant in an assembly as disclosed by Baedke et al. in order to provide a better flow control system wherein the temperature fluctuation varies widely so that the lubricant may last longer.

6. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baedke et al. in view of Gabelli et al., U.S. Patent 4,854,748.

Baedke et al. shows, as discussed above in the rejection of claim 11, the system to dissipate heat from lubricant provide within a differential carrier comprising the chamber with the outlet, but fails to show a temperature-sensitive flow control valve having a spring member for controlling a flow of lubricant.

Gabelli et al. shows, in Figs. 1 and 2, a lubricant chamber having an outlet comprising a temperature-sensitive flow control valve 6 with a spring member 10 to control the flow of the lubricant based at least in part on the temperature of the lubricant.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the temperature-sensitive flow control valve as taught by Gabelli et al. in the system for circulating lubricant in an assembly as disclosed by Baedke et al. in order to provide a better flow control system wherein the temperature fluctuation varies widely so that the lubricant may last longer.

Response to Arguments

7. In response to the applicant's argument that Baedke fails to disclose the cooler, it is the Examiner's view that Baedke shows the cooler as recited in claims 1 and 11. Applicant argues that there is no cooler arranged on the axle tube. However, the Examiner interpreted the axle tube to be the elements 44 and 46 as disclosed by Baedke which is broad enough to read on the definition of the axle tube since the elements 44 and 46 are tubular and receive axles therein. Furthermore, the Examiner interpreted the cooler to be the elements 16 and 17. The tube elements 16 and 17 can be utilized to effectively cool the lubricants that passes through them as disclosed in column 4, lines 3-10 by Baedke. Therefore, the cooler 16 and 17 can be construed to be disposed/mounted external the axle tubes 44 and 46 respectively.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Axle tube coolers.

Iida et al., U.S. Patent 5,622,051

Coyle et al., U.S. Patent 6,499,565 B1

Brehob, U.S. Patent 6,502,665 B1

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chong H. Kim whose telephone number is (703) 305-0922. The examiner can normally be reached on Monday - Friday; 9:00 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A Bucci can be reached on (703) 308-3668. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7687 for regular communications and (703) 305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.

chk
July 17, 2003


CHONG H. KIM
PRIMARY EXAMINER